

What is claimed is:

- 1 1. A sheet abrasive comprising:
2 a thermoplastic polymer layer; and
3 a plurality of abrasive particles dispersed therein.
- 1 2. The sheet abrasive of claim 1, wherein the thermoplastic polymer layer is selected from
2 the group consisting of polyamides, polyurethanes, acetals, thermoplastic polyimides, liquid
3 crystal polymers, polyphenylene sulfides, polyetheramides, polyetheresters, and polyethylene.
- 1 3. The sheet abrasive of claim 1, wherein the plurality of abrasive particles is selected from
2 the group consisting of silicon carbide, aluminum oxide, diamond, ceramic aluminum oxide,
3 ceramic, zirconia aluminum, garnet, cubic boron nitride, and talc.
- 1 4. The sheet abrasive of claim 1, wherein the polymer layer has a thickness from about
2 0.001 inch to about 0.25 inch.
- 1 5. The sheet abrasive of claim 1, wherein the plurality of abrasive particles is dispersed
2 substantially uniformly within the thermoplastic polymer layer.
- 1 6. The sheet abrasive of claim 1, wherein the thermoplastic polymer layer is an extruded
2 thermoplastic polymer layer.
- 1 7. The sheet abrasive of claim 6, wherein the extruded thermoplastic polymer layer is
2 uni-axially oriented.
- 1 8. The sheet abrasive of claim 6, wherein the extruded thermoplastic polymer layer is
2 bi-axially oriented.
- 1 9. The sheet abrasive of claim 1, wherein the thermoplastic polymer layer is an
2 injection-molded thermoplastic polymer layer.
- 1 10. The sheet abrasive of claim 1, wherein the thermoplastic polymer layer comprises a
2 foamed thermoplastic polymer.
- 1 11. The sheet abrasive of claim 1, wherein the abrasive particles comprise from about 1% to
2 about 30% by volume of the sheet abrasive.

- 1 12. The sheet abrasive of claim 1, wherein the abrasive sheet is adapted to form a continuous
2 belt.
- 1 13. The sheet abrasive of claim 1, wherein the abrasive sheet is adapted to form a flap wheel.
- 1 14. The sheet abrasive of claim 1, further comprising a second layer adjacent to the
2 thermoplastic polymer layer.
- 1 15. The sheet abrasive of claim 14, wherein the second layer comprises a polymer.
- 1 16. The sheet abrasive of claim 14, wherein the second layer further comprises a plurality of
2 abrasive particles.
- 1 17. The sheet abrasive of claim 14, further comprising an adhesive layer disposed between
2 the thermoplastic polymer layer and the second layer.
- 1 18. The sheet abrasive of claim 14, wherein the abrasive sheet is adapted to form a
2 continuous belt.
- 1 19. The sheet abrasive of claim 14, wherein the abrasive sheet is adapted to form a flap
2 wheel.
- 1 20. A method of forming a sheet abrasive comprising the steps of:
2 dispersing a plurality of abrasive particles in a molten thermoplastic polymer; and
3 extruding the molten thermoplastic polymer to form a sheet abrasive,
4 wherein the sheet abrasive comprises an extruded thermoplastic polymer layer and the
5 plurality of abrasive particles dispersed therein.
- 1 21. The method of claim 20, wherein the thermoplastic polymer is extruded to form an
2 extruded thermoplastic layer having a thickness from about 0.001 inch to about 0.25 inch.
- 1 22. The method of claim 20, comprising orienting the extruded thermoplastic polymer layer
2 in a uni-axial or bi-axial direction.
- 1 23. The method of claim 22, wherein the orienting step comprises stretching the extruded
2 thermoplastic polymer layer.
- 1 24. The method of claim 20, further comprising the step of providing a second layer adjacent
2 to the extruded thermoplastic polymer layer.

- 1 25. The method of claim 24, wherein the second layer further comprises a plurality of
2 abrasive particles.
- 1 26. The method of claim 24, wherein the second layer comprises a polymer.
- 1 27. The method of claim 26, wherein providing the second layer comprises co-extruding the
2 extruded thermoplastic polymer layer and the second layer.
- 1 28. The method of claim 24, wherein providing the second layer comprises adhering the
2 second layer to the extruded thermoplastic polymer layer with an adhesive.
- 1 29. A method of forming a sheet abrasive comprising the steps of:
2 dispersing a plurality of abrasive particles in a thermoplastic polymer; and
3 injecting the thermoplastic polymer into a mold to form a sheet abrasive,
4 wherein the sheet abrasive comprises an injection-molded thermoplastic polymer layer
5 and the plurality of abrasive particles dispersed therein.